

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Weiss, Roger E.

Serial No.: 09/465,056 Examiner: Nguyen, Truc

Filed: December 16, 1999 Issue Date: February 15, 2005

Patent No. 6,854,985 Docket No.: 15876-46005

For: Elastomeric Interconnection Device and Methods for Making Same

EXPRESS MAIL Mailing Label Number

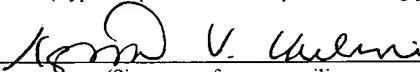
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Date of Deposit: May 27, 2008

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" Service under 37 CFR 1.10 on the date indicated above, and is addressed to the Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Kathryn V. Chelini

(Typed or printed name of person mailing paper or fee)



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Commissioner for Patents  
Office of Patent Publication  
Attention: Certificate of Correction Branch  
P.O. Box 1450  
Alexandria, VA 22313-1450

**REQUEST FOR EXPEDITED ISSUE OF CERTIFICATE OF CORRECTION**  
**UNDER 37 C.F.R § 1.322(a)**

The Applicant respectfully requests that the Director issue a Certificate of Correction on an expedited basis pursuant to 35 U.S.C. § 254 and 37 C.F.R. § 1.322(a) to correct a mistake in the text of Claim 1 incurred through the fault of the Patent and Trademark Office in U.S. Patent No. 6,854,985 issued February 15, 2005.

35 U.S.C. § 254 permits the Director to "issue a certificate of correction stating the fact and nature of such mistake, under seal, without charge, to be recorded in the records of patents"

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when "a mistake in a patent, incurred through the fault of the Patent and Trademark Office, is clearly disclosed by the records of the Office." 35 U.S.C. § 254.

1. U.S. Patent No. 6,854,985, issued February 15, 2005 for "Elastomeric Interconnection Device and Methods for Making Same," included the text of Claim 1, at column 15, lines 63-68, as follows:

*a plurality of electrically conductive contact pads integral with said matrix, said pads in electrical contact with a plurality of conductive pathways, wherein at least a portion of one or more of said is flush with or extends outward from an outer surface of said matrix.*

A copy of the relevant page of U.S. Patent No. 6,854,985, showing the error in column 15, line 66, is attached as Exhibit A.

2. A mistake has been made in text of Claim 1 through the fault of the Office. Claim 1, at column 15, lines 63-68, should read as follows:

*a plurality of electrically conductive contact pads integral with said matrix, said pads in electrical contact with a plurality of conductive pathways, wherein at least a portion of one or more of said --pads-- is flush with or extends outward from an outer surface of said matrix.*

3. The Applicant provided a clean copy of Claim 1 as amended during prosecution in a Response to Office Action, dated December 27, 2001, and received by the U.S. Patent and Trademark Office on January 24, 2002. A true and accurate copy of this Response was downloaded from the Image File Wrapper on the U.S. Patent & Trademark Office PAIR website on May 24, 2008, and is attached hereto as Exhibit B.
4. Since the mistake in the issued patent No. 6,854,985 was incurred through the fault of the Office, and is clearly disclosed in the records of the Office, this request is properly made under 37 C.F.R. § 1.322(a).

5. The Applicant has included a Certificate of Correction Form, PTO/SB/44, showing the location of the error in the printed patent by column and line number. M.P.E.P. 1480, 1485.
6. The Applicant further respectfully requests expedited processing, pursuant to 37 C.F.R. § 1.322 ("Where the correction requested was incurred through the fault of the Office, and the matter is clearly disclosed in the Records of the Office, and is accompanied by documentation that unequivocally supports the patentee's assertion(s), a Certificate of Correction will be *expeditiously issued.*") M.P.E.P. 1480.01 (emphasis added).

Respectfully submitted,

Mirick, O'Connell, DeMallie & Lougee, LLP

By   
\_\_\_\_\_  
Brian M. Dingman, Esq.  
Attorney of Record  
Registration No. 32,729  
Date 5/22/08

Mirick, O'Connell, DeMallie & Lougee, LLP  
1700 West Park Drive  
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UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

Page 1 of       

PATENT NO. : 6,854,985

APPLICATION NO.: 09/465,056

ISSUE DATE : February 15, 2005

INVENTOR(S) : Roger E. Weiss

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 15, line 66, should read  
"least a portion of one or more of said --pads--is flush with or"

MAILING ADDRESS OF SENDER (Please do not use customer number below):

Brian M. Dingman, Esq.  
Mirick O'Connell DeMallie & Lougee, LLP  
1700 West Park Drive, Westborough, MA 01581

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: **Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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# EXHIBIT A

the elastomer sets to form an elastomeric matrix having one or more outer surfaces and comprising one or more electrically conductive pathways through the matrix. After the particles are embedded, one or more electrically conductive contact pads are provided and fixed to the matrix so that at least a portion of one or more of the pads is flush with or extends outward from one or more of the outer surfaces of the matrix and, so that at least a portion of the pad is in at least intimate contact with one or more of the pathways. The pads may be fixed to the matrix by sputtering, vapor depositing, plating, bonding or a combination thereof, with or without the use one or more carrier sheets and/or support films. Alternatively, the pads may be fixed to the matrix as an appliqué of floating or non-floating pads using the techniques described above.

The device made by the method is enhanced by creating one or more means for providing flow space into which at least a portion of the matrix may flow under compression, wherein the step of creating one or more means for providing flow space comprising one or more of the following steps: embedding one or more microspheres in the elastomer as its sets to form the matrix; forming a plurality of raised surface asperities in one or more of the outer surfaces of the matrix as the elastomer sets; and/or trapping one or more gas particles in the matrix as the elastomer sets. The pathways formed may be anisotropic and comprise up to about 25% magnetic particles by volume of the elastomeric matrix. The pathways preferably comprise at least about 3% magnetic particles by volume of the elastomeric matrix. The method preferably utilizes a plurality of the columns of magnetic particles wherein at least one end particle proximate one or more of the outer surface of the matrix, and wherein one or more of the pads is in intimate contact with an end particle of one or more of the columns of particles, wherein the pads preferably comprise one or more layers of metal in at least intimate contact with one or more of the outer surfaces of the matrix and one or more of the pathways.

In methods in which an appliqué of pads are used, the pads are a known number and comprise two opposing end portions having a diameter and a middle portion having a diameter smaller than the diameter of the end portions, and wherein the step of providing one or more electrically conductive contact pads comprises the steps of, providing one or more non-conductive, pliant support sheets comprising a plurality of holes, having a diameter smaller than the diameter of the end portion of the pads, through the sheet corresponding to the number of pads; and pushing one of the opposing ends portions of each of the pads through one of the holes so that the pad is captured in the sheet.

Although specific features of the invention are shown in some drawings and not others, this is for convenience only as some feature may be combined with any or all of the other features in accordance with the invention. Other embodiments will occur to those skilled in the art and are within the following claims.

What is claimed is:

1. An elastomeric device for electrically interconnecting two or more components, comprising:

an elastomeric matrix having one or more outer surfaces; a plurality of electrically conductive pathways through said matrix, the pathways each comprising a plurality of particles; and a plurality of electrically conductive contact pads integral with said matrix, said pads each in electrical contact with a plurality of conductive pathways, wherein at least a portion of one or more of said pads is flush with or extends outward from an outer surface of said matrix.

2. The device of claim 1, further comprising one or more means for providing flow space into which at least a portion of said matrix may flow under compression.

3. The device of claim 2, wherein said means for providing flow space comprises one or more compressible microspheres imbedded in said matrix.

4. The device of claim 2, wherein said means for providing flow space comprises spaces formed between a plurality of raised surface asperities on one or more of said outer surfaces of said matrix.

5. The device of claim 2, wherein said means for providing flow space comprises one or more gas particles located in said matrix.

6. The device of claim 5, wherein said pathways comprise one or more conducting particles and wherein said gas particles are of a size which is about 20% or less than the size of said conducting particles.

7. The device of claim 2, wherein said means for providing flow space comprises one or more spaces formed between two or more of said pads which extend outward from said surface of said matrix.

8. The device of claim 2, further comprising one or more asperities on one or more of said outer surfaces, wherein said means for providing flow space comprises one or more spaces formed between two or more of said asperities.

9. The device of claim 2, wherein one or more of said pathways comprises a plurality of electrically conductive particles, wherein one or more of said particles extends outward from one or more of said outer surfaces, and wherein said means for providing flow space comprises one or more spaces formed between two or more of said particles extending outward from said one or more of said surfaces.

10. The device of claim 1, wherein said pathways are anisotropic and comprise up to about 25% magnetic particles by volume of said elastomeric matrix.

11. The device of claim 10, wherein a plurality of said magnetic particles are aligned to form one or more arrays of electrically isolated columns having at least one end, wherein one or more of said pads is in contact with an end of one or more of said columns of particles.

12. The device of claim 1, wherein one or more of said pathways comprises a plurality of particles aligned to form a column having at least one end, wherein one or more of said pads is in contact with at least one of said ends of one or more of said columns of particles.

13. The device of claim 1, wherein one or more of said pads comprises one or more layers of metal in at least intimate contact with one or more of said outer surfaces of said matrix.

14. The device of claim 13, wherein said pads together form an array of electrically conductive pads across one or more of said outer surfaces of said matrix.

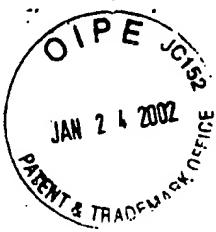
15. The device of claim 14, wherein at least one of said components is a circuit board comprising an array of electrical contact points, (lands), and wherein said array of pads corresponds to said array of contact points on said board.

16. The device of claim 14, wherein at least one of said components is a heat sink, and wherein said matrix is isotropic to conduct heat from said circuit board to said heat sink.

17. The device of claim 14, wherein at least one of said components is a ball grid array comprising an array of solder balls, and wherein said array of pads corresponds to said array of solder balls.

18. The device of claim 1, wherein one or more of said pathways comprises a plurality of electrically conductive particles aligned in a column having at least one end particle

## EXHIBIT B



**MIRICK O'CONNELL**  
ATTORNEYS AT LAW  
MIRICK, O'CONNELL, DEMALLIE & LOUgee, LLP

**COPY OF PAPERS  
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2833

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U.S. PATENT & TRADEMARK OFFICE

December 27, 2001 TC 2000 MAIL ROOM

Commissioner of Patents and Trademarks  
U.S. Patent and Trademark Office  
Washington, DC 20231

#81a  
2-15-02  
JW

Re: Applicant: Roger E. Weiss  
Serial No.: 09/465,056  
Filed: December 16, 1999  
For: Elastomeric Interconnection Device and Methods for Making Same  
Examiner: Nguyen, T.  
Group: 2833  
Docket No.: PARI/981/US

Dear Sir:

Enclosed is a Response in reply to the Office Action mailed July 5, 2001, in the subject application. Also enclosed please find a check in the amount of \$460.00 for the filing fee for a three month extension of time.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned in Westborough, Massachusetts (508) 898-1501.

If any payment during prosecution is found to be insufficient or if any overpayment is found, please charge any deficiency or credit any overpayment to my deposit account number 50-1582. A copy of this letter is enclosed for use by the Finance Branch in the event that it is necessary to make any charge or credit to my deposit account.

Kindly acknowledge receipt of the foregoing by returning the enclosed self-addressed postcard.

Very truly yours,



Brian M. Dingman

BMD/jgm  
Enclosures

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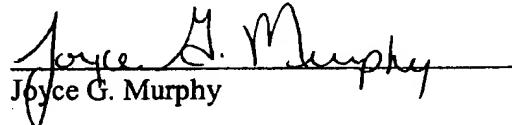
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Applicant: Roger E. Weiss  
Serial No.: 09/465,056  
Filed: December 16, 1999  
For: Elastomeric Interconnection Device and Methods for Making Same  
Paper No.:  
Examiner: T C Nguyen, P.L. ROOM  
Group No.: 2833  
Docket No.: PARI/981/US

To the Commissioner of Patents and Trademarks  
Washington, DC 20231

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to Commissioner of Patents and Trademarks, Washington, DC 20231, on December 27, 2001.

  
Joyce G. Murphy

RESPONSE

This Response is in reply to the Office Action mailed July 5, 2001, in the subject application. In response to the Office Action, please amend the above-identified application as follows.

AMENDMENT A

In the claims:

Please amend claim 1 as set forth below. A clean copy of the claim as amended is in the appendix to this response.

1. An elastomeric device for electrically interconnecting two or more components, comprising:

an elastomeric matrix having one or more outer surfaces;

[one or more] a plurality of electrically conductive pathways through said matrix, the pathways each comprising a plurality of particles; and

[one or more] a plurality of electrically conductive contact pads integral with said matrix,  
said pads each in electrical contact with a plurality of conductive pathways, wherein at least a portion of one or more of said pads is flush with or extends outward from an [one or more of said] outer surface[s] of said matrix[, and wherein at least a portion of said pad is in at least intimate contact with one or more of said pathways].

#### REMARKS

The applicant does not understand what may comprise a title which the examiner feels is better than the existing title. It seems that the title closely matches the preamble of claim 1. Accordingly, the title has not been amended. If the examiner can suggest a more appropriate title, the applicant will consider this.

The examiner rejected all of the claims in issue as anticipated by or obvious over Jin et al 5,618,189. Jin discloses a solder-based medium for interconnecting circuits. As described in the abstract, solder wires or solder-coated particles are embedded in an insulating matrix. The matrix is then used to interconnect meeting pads of devices. An embodiment using wires is shown interconnecting meeting pads of devices in figure 5. The embodiment with particles is shown in a similar fashion in figure 9. In an alternative, the insulating matrix can be dissolved after the interconnection is made to leave just the solder wires or solder-coated particles, as shown in figures 6 and 10 respectively.

Jin does not disclose or suggest the invention of claim 1. Claim 1 includes electrically conductive contact pads that are integral with the matrix and each electrical contact with a plurality of conductive pathways. Such an elastomeric interconnect device is not disclosed in Jin. In Jin, the elastomeric interconnect device has no pads. Rather, the external surface of the device is shown best in figures 5 and 8 have either the wires or column of particles projecting

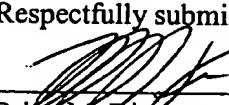
from the matrix surfaces. There are no conductive contact pads integral with the matrix and in electrical contact with the pathways.

Jin does not place any pads on the matrix. Indeed, as shown in figures 5 and 9, the pads of the circuit boards or the like that are interconnected with the Jin interconnect structure clearly do not touch the matrix. Accordingly, they are not even integral with the matrix after the assembly has been completed. Just as importantly, the Jin interconnect device includes no pads. Instead, the interconnect device is soldered to pads of meeting devices such as devices 53 and 55, figure 5, or 93 and 94, figure 9. Accordingly, the Jin reference has all of the problems recited in the background of the subject application, and does not disclose or suggest the construction or the objects of the claimed invention.

Each of the dependent claims currently under consideration add further limitations that are not disclosed or suggested by Jin in combination with claim 1. Accordingly, each of the dependent claims is also patentable.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned in Westborough, Massachusetts, (508) 898-1501.

Respectfully submitted,

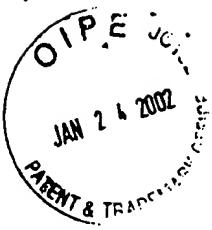


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Brian M. Dingman  
Reg. No. 32,729

Appendix of clean copy of amended claims

1. An elastomeric device for electrically interconnecting two or more components, comprising:  
an elastomeric matrix having one or more outer surfaces;  
a plurality of electrically conductive pathways through said matrix, the pathways each comprising a plurality of particles; and  
a plurality of electrically conductive contact pads integral with said matrix, said pads each in electrical contact with a plurality of conductive pathways, wherein at least a portion of one or more of said pads is flush with or extends outward from an outer surface of said matrix.



**MIRICK O'CONNELL**  
ATTORNEYS AT LAW  
MIRICK, O'CONNELL, DEMALLIE & LOUGEY, LLP

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Roger E. Weiss  
Application No.: 09/465,056  
Title: Elastomeric Interconnection Device and Methods for Making Same  
Docket No.: PARI/981/US

To the Commissioner of Patents and Trademarks  
Washington, DC 20231

**NOTIFICATION OF CHANGE OF ADDRESS**

Please be advised that as of October 22, 2001, the address for the attorney of record for the subject matter has changed to:

Mirick, O'Connell, DeMallie & Lougee, LLP  
1700 West Park Drive  
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Facsimile: (508) 898-1502

Please change the records accordingly.

Respectfully submitted,



Brian M. Dingman, Esq.  
Reg. No. 32, 729

Dated: 12/27/01

MIRICK O'CONNELL

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